APPENDIX D

HYDROLOGY REPORT

SANTA CLARA VALLEY WATER DISTRICT

CALABAZAS CREEK HYDROLOGY REPORT

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SANTA CLARA VALLEY WATER DISTRICT

CALABAZAS CREEK HYDROLOGY REPORT

1. INTRODUCTION

This report summarizes the work completed on the Calabazas Creek hydrology. Calabazas Creek is within Santa Clara Valley Water District's West Valley Watershed. Presented in the report are recommended design flows for Calabazas Creek and its respective tributaries.

The following is a list of the tributaries analyzed in this study:

Calabazas Creek Hydrology

- Calabazas Creek
- Prospect Creek
- Regnart Creek
- Rodeo Creek

2. HYDROLOGIC MODEL

This section provides a summary of the method and procedures developed and used for the hydrology study of the Calabazas Creek watershed. Refer to the District's publication entitled "Hydrology Procedures (Saah et al, 2006)" for more detailed information.

2.1 Design Storm Precipitation

The design storm precipitation has been obtained by using the Global Regional Equations (Saah et al, 1996) to estimate the flood runoff magnitude applying an appropriate rainfall-runoff model.

From the isohyetal map of mean annual precipitation (MAP), locate the specific location of the site and determine the MAP . Some interpolation may be required to obtain the MAP .

Given the mean annual precipitation for the ungaged site, the precipitation intensity is calculated as:

$$i_{T,D} = \frac{a_1 T^{a_2} \exp[SD_e^2 / 2]}{D^{a_3}} \qquad (1)$$

Where:

$i_{T,D}$ = the predicted precipitation intensity in inches per hour or inches per day at return period T

T = return period in years as the recurrence intervals

D = duration D in hours or days

$[a_1, a_2, a_3]$ = model coefficients

SD_e = the standard deviation of the model residuals (random term).

The precipitation depth (in inches) $x_{T,D}$ can be simply obtained from the precipitation intensity $i_{T,D}$ by the following relation:

$$x_{T,D} = i_{T,D}.D$$

For short duration rainfall of a 1% event (specifically for durations of 5 minutes, 10 minutes, up to as much as 24 hours), the model parameters $[a_1, a_2, a_3]$ are estimated as follows:

$$a_1 = 0.2675 + 0.01199 \cdot MAP + 0.00002472 \cdot E$$
$$a_2 = 0.167033$$
$$a_3 = 0.5853 - 0.004155 \cdot MAP - 0.000001096 \cdot E$$

Where:

MAP = the mean annual precipitation in inches
E = the elevation of the ungaged site in feet.

Note that the parameter a_2 is a constant parameter. One more parameter needed in Eq.(1) is the standard deviation of the model residuals (model error term). The standard deviation for the short duration data is SD_e=0.120039. Note that the duration *D* for short duration rainfall analysis in Eq. (1) is in terms of hours.

The precipitation depth obtained from the Global equations may be checked with nearby rainfall gage stations for validations.

2.2 Flood Flow Regression Model

Since the early 1970s, the District has utilized regional regression and correlation techniques to estimate design flows at ungaged locations. The regional regression equations are formulas consisting of flow information such as values from gaged stations as dependent variables and measurable watershed characteristics as independent variables. The application of these equations on ungaged locations will result in estimates of flood flow from any watershed for certain selected frequencies (e.g. 1% or 10% design flows). Regional equations usually apply to rural watersheds. The District updated the regional regression model in 2003 to include data through 2000 based on the following criteria:

1. Use the historic data. No stochastic data are included.
2. Use the data from Santa Clara County and Santa Cruz County.

Based on these criteria, the data were reevaluated and the results of the statistical analyses have been utilized in this regression analysis. The outcomes of this study are documented in a report entitled *Development of Regional Regression Equations to Calculate Flood Quantiles in Santa Clara County* (Saah et al, 2003). The updated regional regression to estimate 24-hr peaks and 1-day volumes for both the 1% and 10% quantiles are as shown below:

FOR 24-hr PEAKS:

$$Q_{1\%} = 11.22 \cdot A^{0.954} \cdot MAP^{1.03}$$

$$Q_{10\%} = 2.985 \cdot A^{0.988} \cdot MAP^{1.173}$$

Where:

A = the watershed area in square miles
MAP = the mean annual precipitation in inches

FOR 1-day VOLUMES:

$$V_{1\%} = 2.254 \cdot A^{0.964} \cdot MAP^{1.187}$$

$$V_{10\%} = 0.895 \cdot A^{0.933} \cdot MAP^{1.244}$$

Where:

A = the watershed area in square miles
MAP = the mean annual precipitation in inches

Note: The 24-hr volume may be approximated by multiplying the 1-day volume by a factor of 1.15.

2.3 Loss Rates

The loss rates for the rural and pervious parts of sub-watersheds are calculated using the Soil Conservation Service (SCS) Curve Number (CN) method. For all impervious areas, loss rates are assumed to be minimal. The hydrologic soil type, the Antecedent Moisture Content (AMC) and the ground cover are defined for each sub-watershed and are used to determine the respective Initial Abstraction (Ia) and the CN for AMCII which represent an average watershed condition.

The Antecedent Moisture Conditions are further calibrated for various watershed conditions and various frequencies of occurrences using the flood volumes obtained from the regression model and those obtained from the rainfall-runoff model. Based on this information, the Ia and CN values for the updated AMC are calculated and input into the HEC-1 model. A map of hydrologic soil types for each watershed is included in the appendices.

For the rural and pervious parts of the watershed, the loss parameters are validated or adjusted based on the calibration process with flood flow regression equations. This process of calibration has made the rainfall-generated flood quantiles more reliable.

2.4 Clark's Synthetic Hydrograph Parameters (Tc and R)

The unit hydrograph parameters applicable to this study are calculated and presented for each creek. Rural, pervious and impervious parts of each sub-watershed are considered separately. The Time of Concentration (Tc) is calculated using Kirby Hathaway's formula:

$$Tc = 0.01377[(L * n)^{0.47} S^{-0.235}]$$

Where:

L=distance of overland flow in feet (ft)
n=Manning's watershed roughness coefficient
S=average slope in ft/ft

The Routing Coefficient (R) is calculated based on an acceptable routing indicator: R/(Tc+R). This indicator directly impacts the peaking characteristics of hydrographs. For rural and pervious sub-sub-watersheds, the indicator is assumed to range between 0.5 and 0.9 based on the calibration process with regression quantiles. For impervious sub-sub watersheds, the indicator is assumed to range between 0.1 and 0.5.

2.5 Urban Hydrology

In 1996, an urban hydrology procedure (Wang and Saah 1996) was developed which addressed the impact of urban growth on flood flows, and this procedure is used for Calabazas Creek. This procedure accounts for the effects on runoff due to two major urban changes: increased imperviousness and increased channelization. Increased imperviousness reduces the overland flow travel time and thus increases the volume of flow. Increased channelization addresses the impact of conveyance through gutters and storm drains together with the increased storage capability of these facilities. The effects of channelization are most pronounced in flat terrain with slopes less than 0.003. Imperviousness represents coverage from streets, buildings and other lot coverage. The coverage from streets in urban residential areas ranges from 2% to 25%, while for other land uses the value can be as high as 95% of the total lot area. The concept of "Equivalent Street" is obtained from the land use requirements for ratio of streets as a part of the total urban sub-watershed. Based on this equivalent street concept, the length and width of streets in an urbanized area are defined and, hence, the unit hydrograph parameters are calculated. The following are the formulas used in this study to calculate unit hydrograph parameters as input to HEC-1.

Equivalent street length (all measurements are in ft or square ft) is calculated by the equation:

$$L_{st}=A_{st}/W_{st}$$

Where:

L_{st} = the equivalent street length
A_{st} = area of streets, (from land use guidelines)
W_{st} = width of streets (from traffic guidelines)

Overland flow length is calculated by the equations:

$$L_i = (A_i - A_{st})/2L_{st}$$
$$L_p = A_p /2L_{st}$$

Where:

L_i = length of overland flow of impervious area
A_i = impervious area, (from land use guidelines)
L_p = length of overland flow of pervious area
A_p = pervious area

The impervious length of overland flow is given by the equation $L_{imp} = L_i + L_{Cb}$ where L_{Cb} is the length of flow to the first catch basin (normally less than 300 ft), and L_i is defined above. The pervious length is given by the equation $L_{perv} = L_p + L_{imp}$.

The Time of Concentration (Tc) is calculated separately for pervious and impervious areas using Kirby-Hathaway's formula as defined in Section 2.4. Time of Concentration for impervious areas is calculated as:

$$Tc_{imp} = Tc_i + Tc_{cb}$$

Where:

Tc_{imp} = Time of Concentration for the impervious area
Tc_i = Time of Concentration of overland flow over impervious area
Tc_{cb} = Time of Concentration of flow length to first catch basin

Time of concentration for pervious areas is calculated as:

$$Tc_{perv} = Tc_p + Tc_{imp}$$

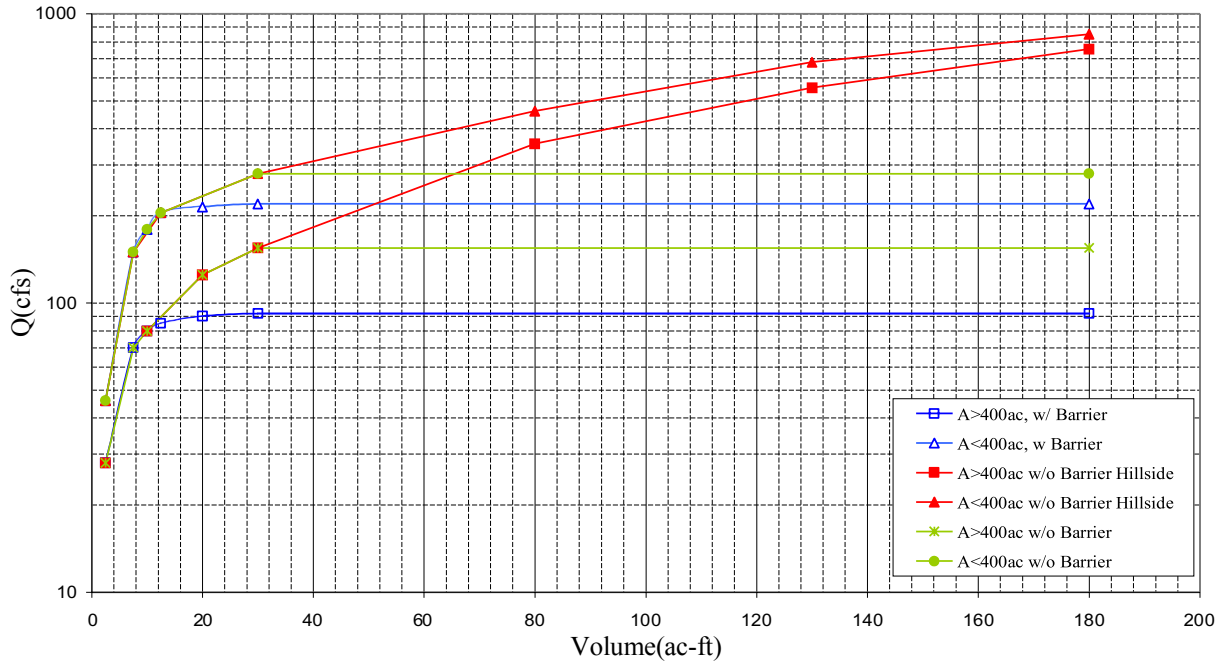
Where:

Tc_{perv} = Time of Concentration for pervious area
Tc_p = Time of Concentration of overland flow over pervious area
Tc_{imp} = Time of Concentration of the impervious length of overland flow

2.6 Routing Procedures

Most of the flood waters from urban areas are conveyed to flood control channels via storm drain systems. Figure 1 shows the general unitized (prorated to one square mile of an area) storage-discharge rating curves that may be applied to valley urban areas. The combined pervious and impervious inflow hydrographs for a study area are routed through the storm drains using the modified pulse routing method. The storage-discharge relationship for that area is calculated from a unitized relationship and applied to obtain the outflow from the storm drain system. The storage routing usually consists of two types of boundary conditions: namely, "with barrier" (eg. berms, levees, houses and etc.) and "without barrier" conditions. The "with barrier" conditions can be found in the lower parts of a watershed, where the lay of the land has flat or mild slopes (generally less than 0.02). Here, the urban runoff can only reach the creeks through the storm drain system, without the possibility of overland connections. The "without barrier" condition generally exists at the upper part of a watershed where slopes are steep (generally greater than 0.02), or in areas without flood control improvements. Runoff water from these areas without barriers normally finds its overland course and eventually reaches the creek channels.

Figure 1. General Unitized Storage-Discharge Rating Curve
(prorated to one square mile of an area)



3. DESIGN HYDROGRAPH ESTIMATION FOR RURAL AND URBAN WATERSHEDS

The hydrologic modeling tool adopted for this study is the HEC-1 Flood Hydrograph Package developed by the U.S. Army Corps of Engineers (1990).

The HEC-1 model has several optional procedures to simulate the various components of the rainfall-runoff process in a watershed. Based on previous modeling studies of rural and urban watersheds around the Santa Clara Valley, the approach adopted by the District in the use of the HEC-1 model for rainfall-runoff modeling is summarized as follows:

- The land use is based Santa Clara County Parcel Data (2001), and Santa Clara County Ortho Photos (2001).
- The SCS curve number is calculated based on Hydrologic Soil Groups in Santa Clara County published by the United States Department of Agriculture, Soil Conservation Service.
- The longest rural channel is defined as a sum of the main channel length and overland flow length. The slope for the basin is calculated using the elevation difference divided by the longest rural length.
- A watershed boundary is delineated using the 7.5-minute Digital Elevation Model available from USGS. For rural areas, the boundary will follow the contour lines. For urban areas, the boundary will follow the street, storm drain system and the contour.
- The SCVWD Maps of Flood Control Facilities and Limits of 1% Flooding are utilized for channel routing information.

4. CALABAZAS CREEK HYDROLOGY

Calabazas Creek Watershed originates at 1,920 feet above mean sea level in the Santa Cruz Mountains and flows north through the Cities of Sunnyvale and Santa Clara. As the Creek reaches near Highway 280, it receives part of the diverted flow from Juiper Serra Channel after a portion of the flow diverted to Sunnvale East Channel. It meets San Tomas Aquino Creek at sea level near San Francisco Bay. The total drainage area is 22.7 square miles, of which 2.2 square miles are rural. The basin receives an average annual rainfall ranging from 39 inches in the headwaters to 13.5 inches near the Bay. There are no reservoirs on Calabazas Creek which function as flood control facilities.

There are three rainfall stations that collectively represent the precipitation patterns on the watershed. These stations are listed below:

- #48 Sunnyvale WPCP
- #77 Valley Christian
- #121 Mtn. View Corp. Yard

Applying the Global equations, the rainfall input range for a 24-hr duration varies from 7.5 inches (1%) and 5.1 inches (10%) for sub-basin A to 4.1 inches (1%) and 2.8 inches (10%) for sub-basin M. These values are very close to the weighted rainfall amounts calculated from the rain gages.

Appendix A contains tables and figures that present the hydrologic characteristics and design flows for Calabazas Creek.

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Saah A.D., J. Wang, W. Chang and N. Lee, 2006. *Hydrology Procedures*, SCVWD, San Jose, CA.

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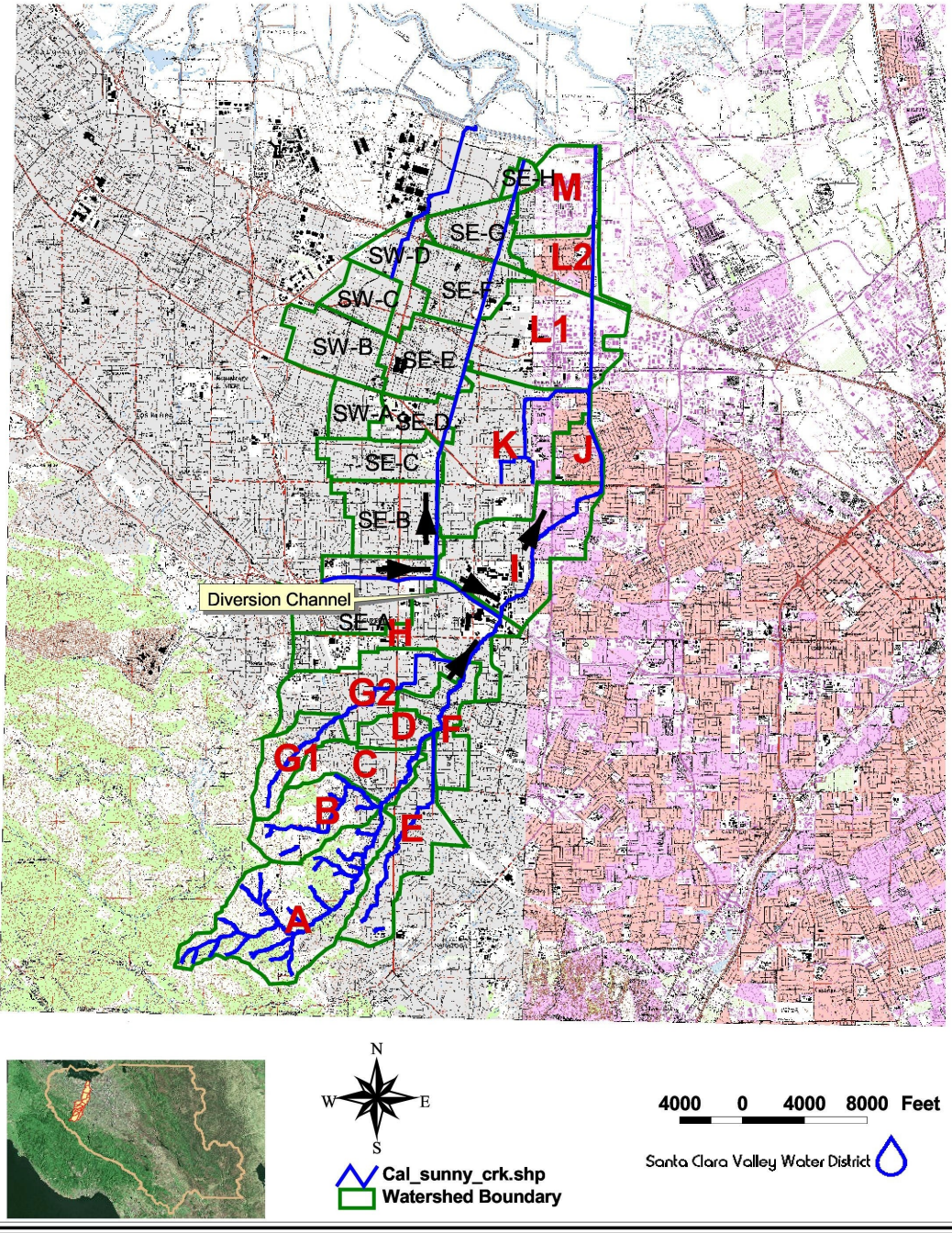
APPENDIX A
CALABAZAS CREEK
HYDROLOGY INFORMATION

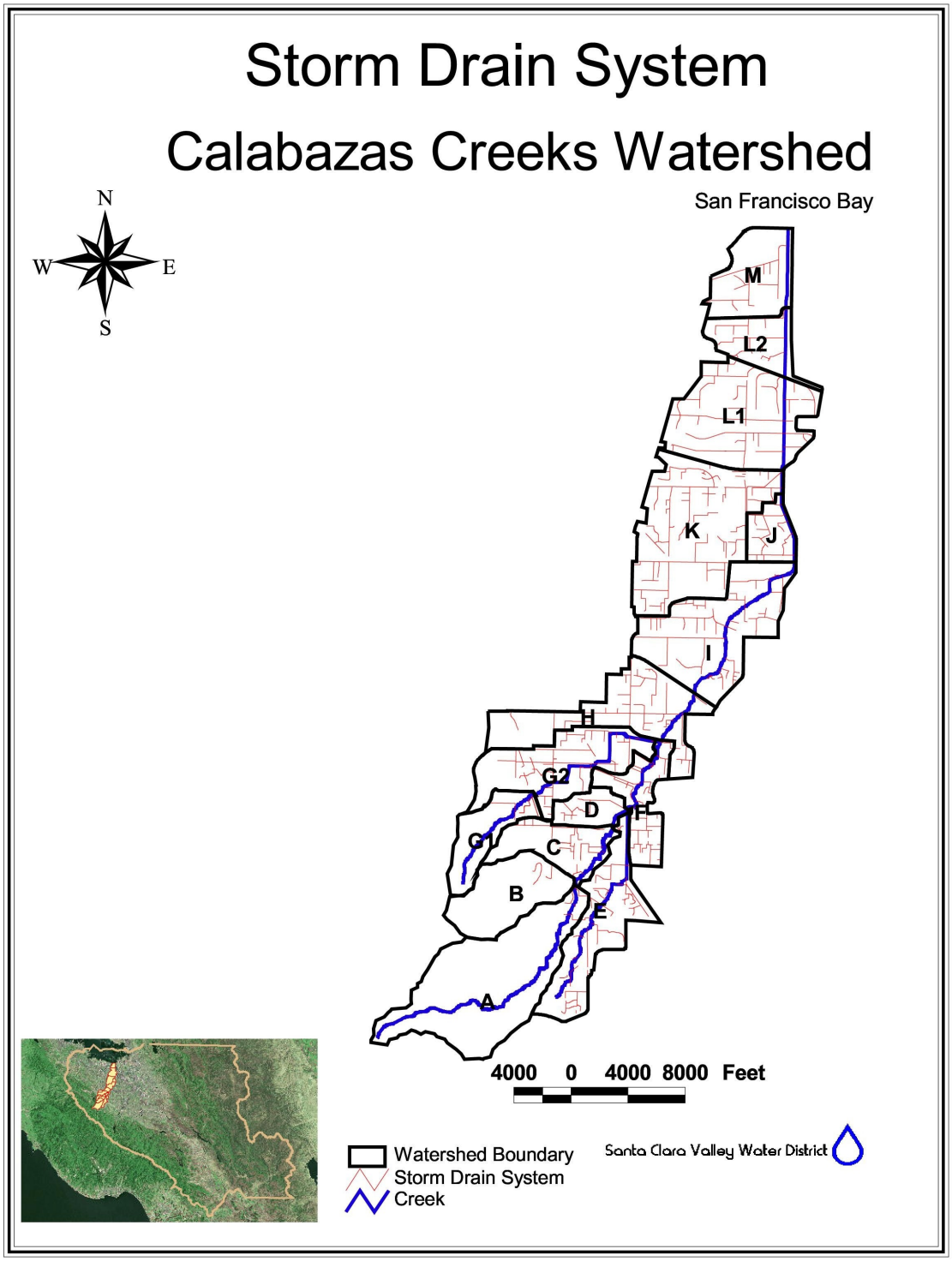
Design Flow of Calabazas Creek

Location	Drainage Area	PEAK FLOW (cfs)						
		2.33 year(*)	5 year(*)	10 year	25 year(*)	50 year(*)	100 year	500 year(*)
	mi^2	Q 43%	Q 20%	Q 10%	Q 4%	Q 2%	Q 1%	Q 0.2%
Calabazas Creek u/s Prospect Creek	2.88	320	500	650	840	970	1,100	1,400
Prospect Creek u/s Calabazas Creek	1.17	80	130	170	220	260	290	360
Calabazas Creek d/s Prospect Creek	4.05	370	600	800	1,000	1,200	1,400	1,800
Calabazas Creek u/s Rodeo Creek	5.30	500	770	980	1,200	1,400	1,600	2,000
Rodeo Creek u/s Calabazas Creek	1.48	120	170	210	260	290	320	380
Calabazas Creek d/s Rodeo Creek	6.78	600	930	1,200	1,500	1,800	2,000	2,500
Calabazas Creek u/s Regnart Creek	7.57	670	1,000	1,300	1,600	1,900	2,100	2,600
Regnart Creek u/s Calabazas Creek	2.32	210	300	370	450	510	560	670
Calabazas Creek d/s Regnart Creek	9.89	860	1,300	1,650	2,100	2,400	2,650	3,250
Calabazas Creek @ I-280	11.65	1,100	1,500	1,900	2,300	2,600	2,900	3,500
Calabazas Creek @ El Camino Real	13.81	1,200	1,700	2,050	2,500	2,800	3,050	3,600
Calabazas Creek u/s El Camino storm drain (@ Monroe St, near Willcox High School)	14.27	1,200	1,700	2,100	2,600	2,900	3,150	3,750
El Camino storm drain u/s Calabazas Creek	2.79	170	240	300	370	410	450	540
Calabazas Creek d/s El Camino storm drain (@ SPRR)	17.06	1,400	2,000	2,400	2,900	3,300	3,600	4,300
Calabazas Creek @US 101	19.31	1,500	2,100	2,600	3,100	3,500	3,800	4,500
Calabazas Creek d/s Hwy 237 @ pump station	21.14	1,600	2,200	2,650	3,200	3,600	3,900	4,600

- (*) extrapolated and interpolated by using log Pearson Type III distribution.

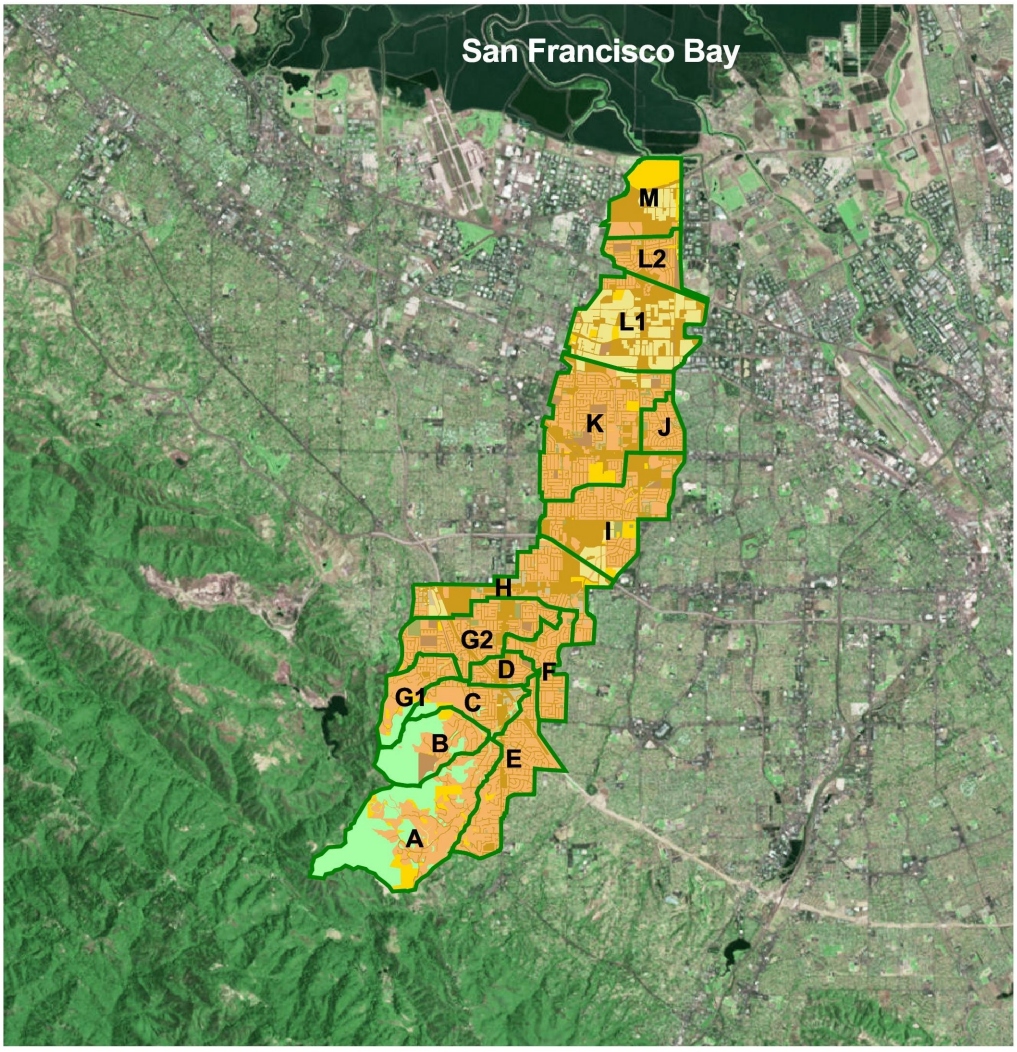
Calabazas Creek Watershed Boundary




Storm Drain System
Calabazas Creeks Watershed
N
W
E
S
San Francisco Bay
M
L2
L1
K
J
I
H
G2
D
F
G
C
B
E
A
4000 0 4000 8000 Feet
Watershed Boundary
Storm Drain System
Creek
Santa Clara Valley Water District

Land Use

Calabazas Creek Watershed





Watershed Boundary

Land Use

- Rural
- Rural/Estate Residential
- Low Density Residential
- Medium Density Residential
- High Density Residential
- Commercial
- Industrial
- Public/Quasi-Public
- Park

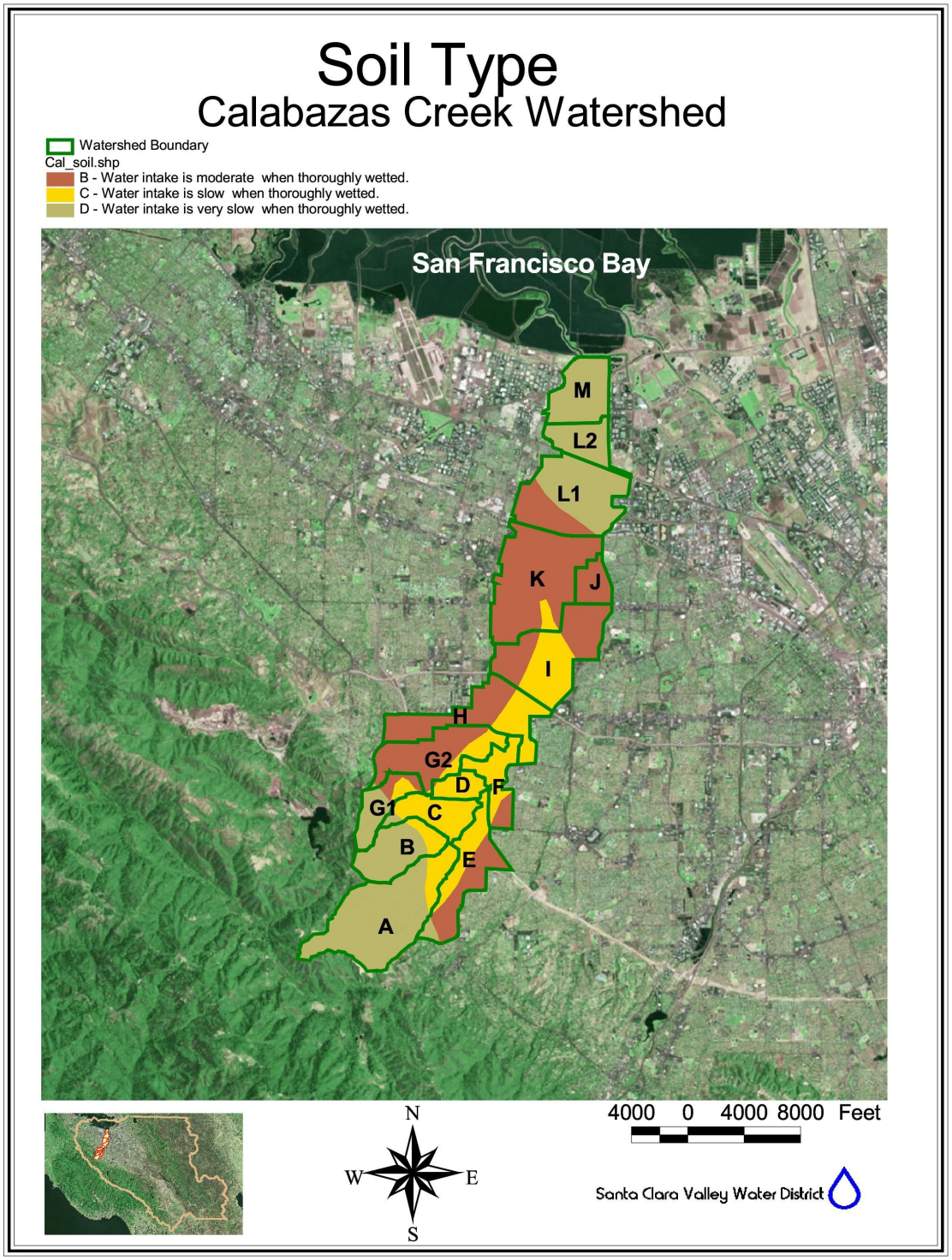
4000 0 4000 8000 Feet

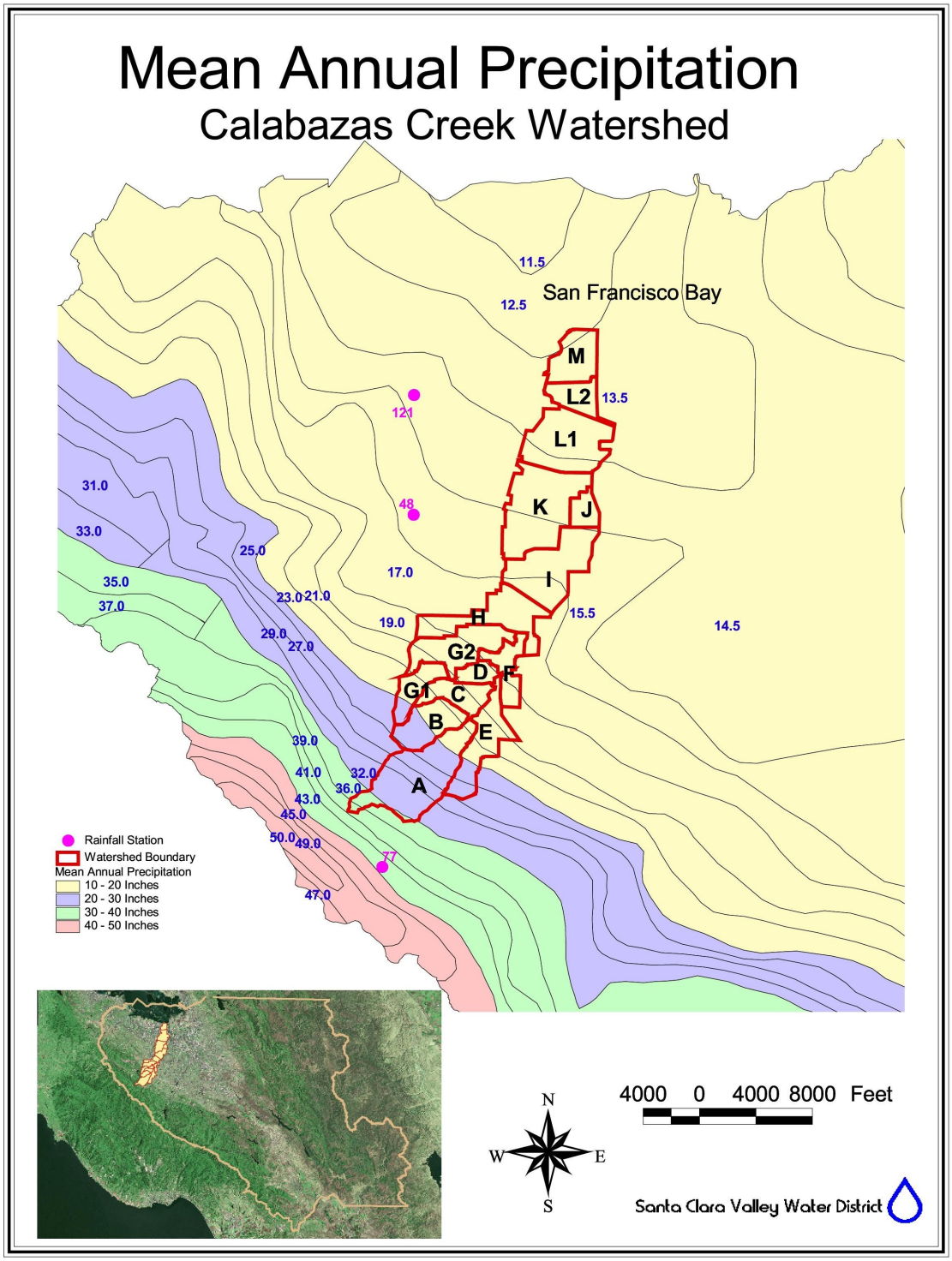
N

W E

S

Santa Clara Valley Water District


Soil Type
Calabazas Creek Watershed
Watershed Boundary
Cal_soil.shp
B - Water intake is moderate when thoroughly wetted.
C - Water intake is slow when thoroughly wetted.
D - Water intake is very slow when thoroughly wetted.
San Francisco Bay
M
L2
L1
K
J
I
H
G2
D
F
G1
C
B
E
A
N
W
E
S
4000 0 4000 8000 Feet
Santa Clara Valley Water District


Mean Annual Precipitation
Calabazas Creek Watershed
San Francisco Bay
11.5
12.5
13.5
14.5
15.5
17.0
19.0
21.0
23.0
25.0
27.0
29.0
31.0
32.0
33.0
35.0
36.0
37.0
39.0
41.0
43.0
45.0
47.0
49.0
50.0
M
L2
L1
K
J
I
H
G2
D
F
G1
C
B
E
A
121
48
77
Rainfall Station
Watershed Boundary
Mean Annual Precipitation
10 - 20 Inches
20 - 30 Inches
30 - 40 Inches
40 - 50 Inches
N
W
E
S
4000 0 4000 8000 Feet
Santa Clara Valley Water District

Calabazas Creek (1% HEC-1 Input Data)

BASIN	Total Area 1	Rural Area 2	Perv Area 3	Imp Area 4	Rural Ia - Calc 5	Rural CN 6	Perv Ia - Calc 7	Perv CN 8	Imp Ia - Calc 9	Imp CN 10	Rural Tc 11	Rural R 12	Perv Tc 13	Perv R 14	Imp Tc 15	Imp R 16
A	2.88	1.35	0.69	0.84	0.59	77	0.42	83	0.04	98	0.49	1.97	0.37	1.47	0.22	0.15
B	1.17	0.61	0.25	0.31	0.59	77	0.45	82	0.04	98	0.38	2.17	0.49	2.77	0.25	0.17
C	0.85	0.11	0.22	0.52	0.68	75	0.56	78	0.04	98	0.26	1.48	0.35	1.99	0.22	0.15
D	0.40		0.10	0.30			0.56	78	0.04	98			0.36	2.03	0.23	0.15
E	1.48		0.44	1.04			0.80	72	0.04	98			0.38	2.15	0.23	0.16
F	0.79		0.24	0.55			0.65	75	0.04	98			0.36	2.06	0.23	0.15
G1	0.75	0.14	0.21	0.40	0.62	76	0.56	78	0.04	98	0.32	1.79	0.28	1.60	0.20	0.13
G2	1.57		0.47	1.10			0.92	69	0.04	98			0.37	2.08	0.23	0.15
H	1.76		0.35	1.41			0.84	71	0.04	98			0.34	1.91	0.23	0.15
I	2.16		0.54	1.62			0.80	72	0.04	98			0.39	2.19	0.24	0.16
J	0.46		0.12	0.35			1.03	66	0.04	98			0.42	2.39	0.25	0.17
K	2.79		0.84	1.95			0.99	67	0.04	98			0.43	0.43	0.25	0.16
L1	2.25		0.22	2.03			0.56	78	0.04	98			0.36	2.04	0.26	0.17
L2	0.73		0.22	0.51			0.40	84	0.04	98			0.46	2.58	0.26	0.17
M	1.10		0.33	0.77			0.40	84	0.04	98			0.49	0.49	0.27	0.18

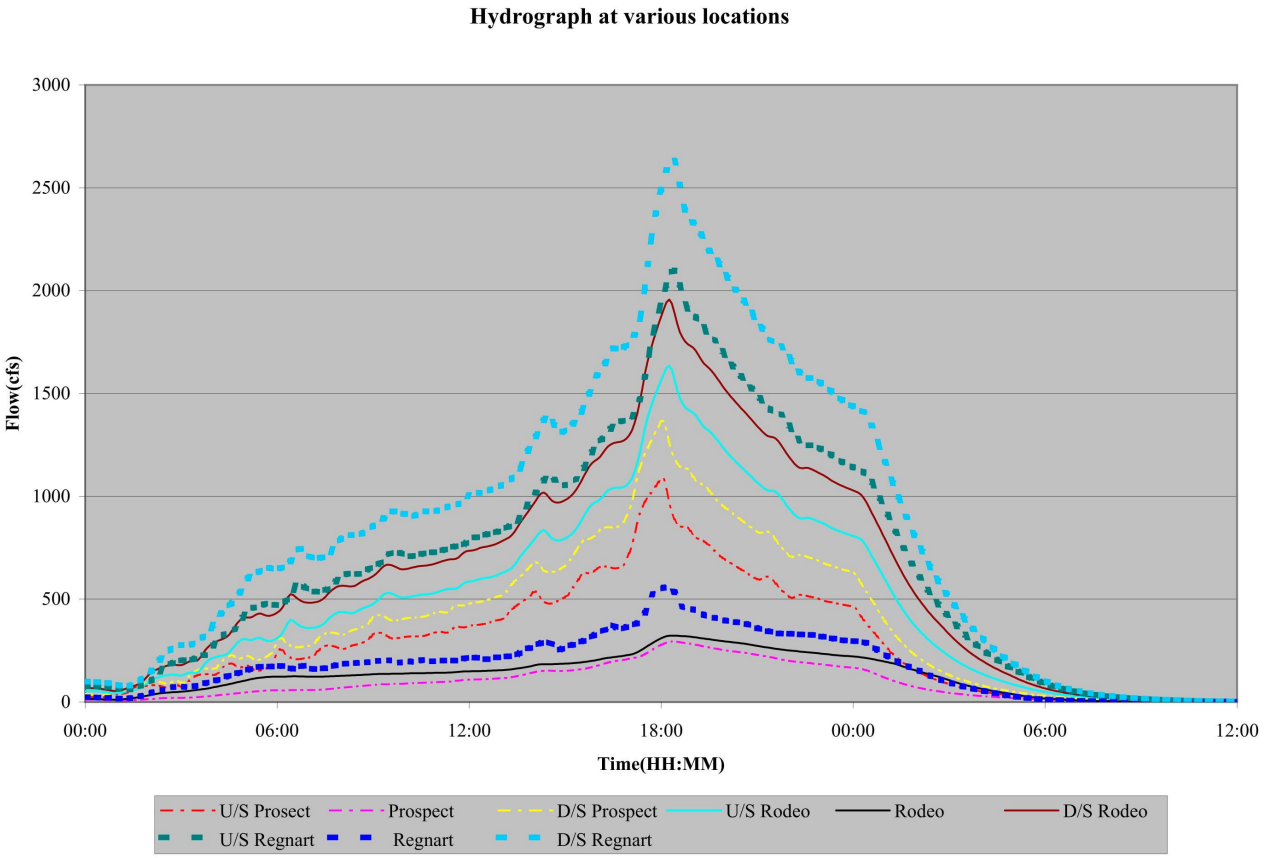
1. Total area of the sub-watershed in square miles
2. The rural part of the sub-watershed, area in square miles
3. The pervious part of the sub-watershed, area in square miles
4. The impervious part of the sub-watershed, area in square miles
5. Initial Abstraction (Ia) for rural area
6. Curve Number(CN) for rural area
7. Initial Abstraction (Ia) for pervious area
8. Curve Number(CN) for pervious area
9. Initial Abstraction (Ia) for impervious area
10. Curve Number(CN) for impervious area
11. Times of Concentration(Tc) for rural area
12. Clark's Storage Routing Coefficient R for rural area
13. Times of Concentration(Tc) for pervious area
14. Clark's Storage Routing Coefficient R for perviousarea
15. Times of Concentration(Tc) for impervious area
16. Clark's Storage Routing Coefficient R for impervious area

Calabazas Creek (10% HEC-1 Input Data)

BASIN	Total Area 1	Rural Area 2	Perv Area 3	Imp Area 4	Rural Ia - Calc 5	Rural CN 6	Perv Ia - Calc 7	Perv CN 8	Imp Ia - Calc 9	Imp CN 10	Rural Tc 11	Rural R 12	Perv Tc 13	Perv R 14	Imp Tc 15	Imp R 16
A	2.88	1.35	0.69	0.84	0.93	68	0.68	75	0.04	98	0.49	1.97	0.37	1.47	0.22	0.15
B	1.17	0.61	0.25	0.31	0.93	68	0.72	74	0.04	98	0.38	2.17	0.49	2.77	0.25	0.17
C	0.85	0.11	0.22	0.52	1.08	65	0.88	69	0.04	98	0.26	1.48	0.35	1.99	0.22	0.15
D	0.40		0.10	0.30			0.88	69	0.04	98			0.36	2.03	0.23	0.15
E	1.48		0.44	1.04			1.23	62	0.04	98			0.38	2.15	0.23	0.16
F	0.79		0.24	0.55			1.03	66	0.04	98			0.36	2.06	0.23	0.15
G1	0.75	0.14	0.21	0.40	0.98	67	0.88	69	0.04	98	0.32	1.79	0.28	1.60	0.20	0.13
G2	1.57		0.47	1.10			1.39	59	0.04	98			0.37	2.08	0.23	0.15
H	1.76		0.35	1.41			1.28	61	0.04	98			0.34	1.91	0.23	0.15
I	2.16		0.54	1.62			1.23	62	0.04	98			0.39	2.19	0.24	0.16
J	0.46		0.12	0.35			1.57	56	0.04	98			0.42	2.39	0.25	0.17
K	2.79		0.84	1.95			1.51	57	0.04	98			0.43	0.43	0.25	0.16
L1	2.25		0.22	2.03			0.88	69	0.04	98			0.36	2.04	0.26	0.17
L2	0.73		0.22	0.51			0.65	76	0.04	98			0.46	2.58	0.26	0.17
M	1.10		0.33	0.77			0.65	76	0.04	98			0.49	0.49	0.27	0.18

1. Total area of the sub-watershed in square miles
2. The rural part of the sub-watershed, area in square miles
3. The pervious part of the sub-watershed, area in square miles
4. The impervious part of the sub-watershed, area in square miles
5. Initial Abstraction (Ia) for rural area
6. Curve Number(CN) for rural area
7. Initial Abstraction (Ia) for pervious area
8. Curve Number(CN) for pervious area
9. Initial Abstraction (Ia) for impervious area
10. Curve Number(CN) for impervious area
11. Times of Concentration(Tc) for rural area
12. Clark's Storage Routing Coefficient R for rural area
13. Times of Concentration(Tc) for pervious area
14. Clark's Storage Routing Coefficient R for perviousarea
15. Times of Concentration(Tc) for impervious area
16. Clark's Storage Routing Coefficient R for impervious area

Design Flow Hydrographs



Design Flow Hydrograph Tables

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
36892	29	12	41	53	15	68	76	23	99
01/01/2050 0:05	27	12	39	53	15	68	76	23	99
01/01/2050 0:10	25	12	37	53	15	67	76	23	99
01/01/2050 0:15	24	11	35	53	14	67	75	23	98
01/01/2050 0:20	22	11	34	52	14	66	75	22	97
01/01/2050 0:25	21	11	32	52	13	65	75	22	97
01/01/2050 0:30	21	11	32	51	13	64	75	21	96
01/01/2050 0:35	23	10	33	49	12	62	74	21	95
01/01/2050 0:40	26	9	35	47	12	59	73	20	93
01/01/2050 0:45	31	8	39	45	12	57	72	20	92
01/01/2050 0:50	35	8	43	44	12	55	71	19	89
01/01/2050 0:55	37	7	44	42	12	54	69	18	86
01/01/2050 1:00	37	7	44	42	12	54	66	17	83
01/01/2050 1:05	38	7	45	43	12	55	64	17	81
01/01/2050 1:10	40	7	47	46	13	59	62	17	79
01/01/2050 1:15	43	7	50	50	14	64	61	17	78
01/01/2050 1:20	47	8	55	53	15	69	61	17	78
01/01/2050 1:25	57	8	65	56	17	73	62	19	81
01/01/2050 1:30	68	9	77	58	19	77	65	20	85
01/01/2050 1:35	75	10	85	61	21	82	70	23	93
01/01/2050 1:40	78	11	88	64	23	88	75	26	101
01/01/2050 1:45	77	12	89	70	26	95	81	29	110
01/01/2050 1:50	78	12	90	78	28	106	86	33	119
01/01/2050 1:55	79	13	92	90	30	120	92	36	128
01/01/2050 2:00	81	14	95	102	33	134	98	41	139
01/01/2050 2:05	82	15	97	110	35	145	106	46	152
01/01/2050 2:10	82	16	98	115	38	153	117	51	168
01/01/2050 2:15	81	17	98	118	41	159	131	56	187
01/01/2050 2:20	79	18	97	122	43	164	147	58	205
01/01/2050 2:25	75	19	94	125	44	169	161	60	221
01/01/2050 2:30	71	19	90	129	45	174	171	63	233
01/01/2050 2:35	70	19	89	131	46	178	178	66	245
01/01/2050 2:40	75	20	94	133	47	180	184	70	255
01/01/2050 2:45	82	20	101	133	48	181	190	73	264
01/01/2050 2:50	85	20	104	132	48	180	196	75	271
01/01/2050 2:55	81	20	101	130	49	179	199	76	275
01/01/2050 3:00	74	20	94	129	50	179	202	75	277
01/01/2050 3:05	74	21	95	132	51	183	203	74	277
01/01/2050 3:10	86	21	107	138	53	190	203	73	276
01/01/2050 3:15	103	22	124	143	54	197	203	73	276

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 3:20	115	23	138	144	55	199	205	75	280
01/01/2050 3:25	124	23	147	142	57	199	210	77	287
01/01/2050 3:30	130	24	154	142	59	201	218	80	298
01/01/2050 3:35	134	25	159	153	60	213	224	84	308
01/01/2050 3:40	135	26	161	170	62	233	227	88	315
01/01/2050 3:45	135	27	162	188	64	252	229	92	320
01/01/2050 3:50	135	28	163	200	66	266	236	96	331
01/01/2050 3:55	133	29	162	209	69	278	252	99	351
01/01/2050 4:00	131	30	161	215	71	286	274	102	376
01/01/2050 4:05	133	32	165	219	74	293	293	105	398
01/01/2050 4:10	143	33	176	222	76	299	307	108	415
01/01/2050 4:15	157	34	192	225	79	304	318	113	431
01/01/2050 4:20	169	36	204	227	82	309	327	119	446
01/01/2050 4:25	178	37	215	231	84	316	334	124	458
01/01/2050 4:30	186	38	224	241	87	328	341	128	469
01/01/2050 4:35	188	40	228	256	90	346	347	132	480
01/01/2050 4:40	182	41	223	272	93	365	356	136	492
01/01/2050 4:45	172	42	214	287	96	383	368	140	508
01/01/2050 4:50	167	44	211	299	99	397	387	144	531
01/01/2050 4:55	170	45	215	305	102	407	408	148	556
01/01/2050 5:00	176	46	222	306	105	411	428	153	581
01/01/2050 5:05	177	48	225	303	108	410	444	157	601
01/01/2050 5:10	170	49	219	301	110	411	454	161	615
01/01/2050 5:15	159	50	210	304	113	416	459	165	624
01/01/2050 5:20	153	51	204	309	115	424	461	168	628
01/01/2050 5:25	152	52	204	313	117	430	462	170	633
01/01/2050 5:30	154	53	208	310	119	429	468	172	640
01/01/2050 5:35	158	55	213	304	120	424	475	173	648
01/01/2050 5:40	164	56	220	298	122	420	480	173	653
01/01/2050 5:45	172	56	228	296	122	419	480	172	652
01/01/2050 5:50	184	57	241	298	123	422	476	173	649
01/01/2050 5:55	210	57	266	303	124	427	472	174	646
01/01/2050 6:00	239	57	296	311	124	434	472	176	647
01/01/2050 6:05	256	56	312	321	123	444	475	176	651
01/01/2050 6:10	251	56	306	336	123	459	481	174	655
01/01/2050 6:15	236	56	292	360	123	483	489	171	661
01/01/2050 6:20	225	57	282	385	124	509	501	168	669
01/01/2050 6:25	216	58	274	399	125	524	518	165	683
01/01/2050 6:30	211	58	269	396	125	521	542	162	704
01/01/2050 6:35	208	58	267	385	125	510	566	160	726

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 6:40	208	58	266	374	125	499	576	165	741
01/01/2050 6:45	210	58	268	367	124	491	572	173	745
01/01/2050 6:50	212	58	270	362	124	486	561	177	738
01/01/2050 6:55	214	58	272	360	124	483	551	173	724
01/01/2050 7:00	216	58	274	359	123	482	544	166	710
01/01/2050 7:05	220	58	278	360	123	483	540	162	702
01/01/2050 7:10	231	58	289	362	123	485	537	160	697
01/01/2050 7:15	244	58	303	365	123	488	537	161	698
01/01/2050 7:20	255	59	314	369	123	492	538	162	700
01/01/2050 7:25	264	60	324	376	123	499	541	163	704
01/01/2050 7:30	272	61	333	387	124	510	545	165	709
01/01/2050 7:35	276	63	338	400	124	525	550	166	716
01/01/2050 7:40	275	64	339	413	125	538	559	170	728
01/01/2050 7:45	272	65	337	423	126	549	571	175	746
01/01/2050 7:50	268	67	335	431	126	558	586	179	765
01/01/2050 7:55	263	68	331	436	127	563	599	182	781
01/01/2050 8:00	258	69	327	438	128	565	610	184	794
01/01/2050 8:05	257	70	328	437	128	565	618	186	804
01/01/2050 8:10	262	71	334	435	129	564	623	187	810
01/01/2050 8:15	269	73	342	433	129	562	625	187	812
01/01/2050 8:20	275	74	348	432	130	562	624	188	812
01/01/2050 8:25	278	75	352	434	130	565	623	189	812
01/01/2050 8:30	280	76	355	441	131	571	623	190	813
01/01/2050 8:35	282	77	359	449	131	580	624	191	815
01/01/2050 8:40	287	78	365	455	132	587	629	192	820
01/01/2050 8:45	294	79	373	460	133	593	636	193	829
01/01/2050 8:50	302	80	382	464	134	598	645	194	839
01/01/2050 8:55	314	81	396	470	134	604	652	196	848
01/01/2050 9:00	328	83	411	477	135	612	658	197	855
01/01/2050 9:05	337	84	421	486	136	622	664	199	863
01/01/2050 9:10	338	85	423	498	137	635	671	200	871
01/01/2050 9:15	336	86	421	512	137	649	680	201	881
01/01/2050 9:20	331	86	418	524	137	661	691	202	893
01/01/2050 9:25	323	86	410	530	137	667	704	202	907
01/01/2050 9:30	314	87	401	530	137	667	717	203	920
01/01/2050 9:35	309	87	396	527	137	665	727	201	927
01/01/2050 9:40	308	88	396	522	138	660	730	196	927
01/01/2050 9:45	310	88	398	515	138	653	729	192	922
01/01/2050 9:50	312	88	400	510	138	648	726	192	917
01/01/2050 9:55	314	89	403	507	138	645	720	195	915

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 10:00	317	89	406	508	138	646	714	200	914
01/01/2050 10:05	318	90	408	509	139	648	710	201	911
01/01/2050 10:10	319	91	410	512	139	651	709	197	906
01/01/2050 10:15	319	92	410	515	140	654	711	194	905
01/01/2050 10:20	319	92	411	518	140	658	713	194	908
01/01/2050 10:25	319	93	412	520	140	660	717	199	915
01/01/2050 10:30	320	93	413	521	140	662	720	204	924
01/01/2050 10:35	321	94	415	522	140	663	723	205	928
01/01/2050 10:40	325	94	419	523	141	664	725	202	927
01/01/2050 10:45	330	95	424	525	141	666	726	199	925
01/01/2050 10:50	334	95	429	527	141	668	728	198	926
01/01/2050 10:55	337	96	433	530	142	672	729	199	928
01/01/2050 11:00	341	96	437	534	142	676	731	200	931
01/01/2050 11:05	342	97	439	538	142	681	734	200	934
01/01/2050 11:10	340	97	437	543	142	685	738	201	939
01/01/2050 11:15	337	98	435	546	143	689	742	202	944
01/01/2050 11:20	337	99	436	549	143	692	747	202	949
01/01/2050 11:25	346	100	446	550	144	694	751	201	953
01/01/2050 11:30	357	101	458	550	145	694	755	201	956
01/01/2050 11:35	365	103	467	551	146	697	758	202	959
01/01/2050 11:40	366	104	470	557	147	703	759	204	963
01/01/2050 11:45	364	106	469	567	148	715	761	208	968
01/01/2050 11:50	363	107	470	578	149	726	765	211	976
01/01/2050 11:55	365	108	473	584	149	733	775	215	989
01/01/2050 12:00	369	109	478	586	149	735	786	218	1004
01/01/2050 12:05	373	109	482	587	150	736	795	218	1014
01/01/2050 12:10	374	109	484	589	150	739	800	217	1017
01/01/2050 12:15	375	110	485	594	150	744	802	215	1017
01/01/2050 12:20	377	110	487	598	150	749	804	212	1017
01/01/2050 12:25	379	110	489	601	151	752	808	210	1018
01/01/2050 12:30	381	111	492	603	151	755	813	208	1021
01/01/2050 12:35	384	112	496	605	152	757	817	208	1026
01/01/2050 12:40	388	113	501	607	153	760	820	211	1032
01/01/2050 12:45	392	113	506	610	153	763	823	215	1038
01/01/2050 12:50	396	114	510	614	154	768	826	217	1043
01/01/2050 12:55	398	115	513	620	154	774	829	218	1047
01/01/2050 13:00	400	116	516	626	155	780	834	219	1052
01/01/2050 13:05	406	117	523	632	155	787	840	220	1060
01/01/2050 13:10	420	118	537	637	156	794	847	221	1068
01/01/2050 13:15	436	119	556	643	157	801	854	223	1077

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 13:20	450	121	572	652	159	811	862	225	1086
01/01/2050 13:25	462	124	585	666	161	827	870	227	1097
01/01/2050 13:30	471	126	598	685	163	848	880	231	1111
01/01/2050 13:35	480	129	609	704	165	869	895	238	1133
01/01/2050 13:40	489	132	621	721	167	888	915	248	1163
01/01/2050 13:45	498	135	633	737	169	906	938	257	1195
01/01/2050 13:50	508	138	646	752	171	923	959	261	1220
01/01/2050 13:55	520	141	661	767	174	941	979	263	1242
01/01/2050 14:00	533	143	676	783	177	960	998	267	1265
01/01/2050 14:05	536	146	682	800	180	980	1017	274	1291
01/01/2050 14:10	522	149	671	817	182	999	1037	281	1318
01/01/2050 14:15	502	151	652	830	183	1014	1058	288	1346
01/01/2050 14:20	488	152	639	835	184	1018	1077	293	1370
01/01/2050 14:25	481	152	633	826	184	1010	1093	295	1388
01/01/2050 14:30	478	152	631	810	184	994	1099	291	1390
01/01/2050 14:35	479	152	631	796	184	980	1094	279	1373
01/01/2050 14:40	484	151	635	788	184	972	1080	265	1345
01/01/2050 14:45	490	151	640	785	185	970	1065	255	1321
01/01/2050 14:50	495	151	646	786	185	971	1056	254	1310
01/01/2050 14:55	502	151	653	789	186	975	1053	260	1313
01/01/2050 15:00	510	152	662	795	187	982	1054	267	1322
01/01/2050 15:05	520	153	673	803	187	990	1058	272	1330
01/01/2050 15:10	538	154	692	812	188	1000	1065	275	1340
01/01/2050 15:15	558	155	713	824	189	1013	1075	279	1354
01/01/2050 15:20	576	156	732	839	190	1029	1086	284	1369
01/01/2050 15:25	595	158	753	858	191	1050	1099	288	1388
01/01/2050 15:30	614	159	773	881	193	1074	1116	293	1409
01/01/2050 15:35	626	161	787	904	194	1098	1138	297	1435
01/01/2050 15:40	628	164	792	926	196	1122	1162	302	1465
01/01/2050 15:45	626	166	793	946	198	1144	1189	309	1497
01/01/2050 15:50	628	169	798	961	200	1161	1214	317	1531
01/01/2050 15:55	637	173	809	969	202	1171	1237	326	1563
01/01/2050 16:00	648	176	825	975	205	1179	1256	334	1590
01/01/2050 16:05	657	180	837	984	208	1191	1270	339	1609
01/01/2050 16:10	660	184	844	998	210	1208	1280	345	1625
01/01/2050 16:15	660	188	848	1014	213	1227	1292	354	1646
01/01/2050 16:20	659	192	851	1027	215	1242	1309	366	1675
01/01/2050 16:25	655	195	850	1036	216	1252	1328	375	1703
01/01/2050 16:30	650	197	847	1040	218	1258	1344	374	1718

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Prosect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 16:35	649	199	848	1042	220	1262	1355	364	1719
01/01/2050 16:40	653	201	854	1042	221	1264	1361	354	1716
01/01/2050 16:45	658	203	861	1043	223	1266	1365	352	1717
01/01/2050 16:50	670	205	875	1046	225	1271	1368	357	1725
01/01/2050 16:55	694	208	902	1054	227	1281	1372	365	1736
01/01/2050 17:00	723	210	933	1067	229	1296	1378	370	1748
01/01/2050 17:05	758	213	970	1088	232	1320	1389	374	1763
01/01/2050 17:10	811	215	1026	1119	236	1355	1407	378	1784
01/01/2050 17:15	870	218	1088	1159	242	1401	1432	383	1816
01/01/2050 17:20	916	221	1137	1210	249	1459	1470	391	1861
01/01/2050 17:25	949	226	1175	1272	256	1528	1520	406	1926
01/01/2050 17:30	975	233	1207	1335	265	1599	1582	434	2016
01/01/2050 17:35	996	240	1236	1387	273	1660	1654	474	2128
01/01/2050 17:40	1014	249	1262	1428	281	1709	1728	507	2236
01/01/2050 17:45	1031	257	1287	1465	289	1754	1793	522	2316
01/01/2050 17:50	1049	264	1313	1500	296	1796	1847	530	2377
01/01/2050 17:55	1068	271	1339	1533	303	1836	1895	541	2436
01/01/2050 18:00	1087	277	1364	1565	310	1874	1941	550	2491
01/01/2050 18:05	1084	283	1367	1597	315	1912	1985	556	2540
01/01/2050 18:10	1035	288	1323	1624	320	1943	2026	559	2585
01/01/2050 18:15	968	292	1260	1634	322	1956	2064	557	2620
01/01/2050 18:20	919	294	1213	1616	323	1939	2091	548	2639
01/01/2050 18:25	887	294	1182	1570	322	1892	2097	534	2631
01/01/2050 18:30	866	293	1159	1517	322	1839	2074	513	2587
01/01/2050 18:35	854	291	1145	1478	321	1799	2027	488	2515
01/01/2050 18:40	851	289	1140	1452	321	1772	1976	466	2442
01/01/2050 18:45	852	287	1139	1433	320	1753	1937	455	2392
01/01/2050 18:50	847	285	1132	1421	319	1740	1912	453	2365
01/01/2050 18:55	832	283	1115	1414	318	1732	1894	453	2347
01/01/2050 19:00	813	281	1095	1407	316	1723	1880	450	2331
01/01/2050 19:05	800	279	1078	1393	314	1708	1871	445	2315
01/01/2050 19:10	792	276	1069	1374	312	1686	1860	439	2298
01/01/2050 19:15	788	274	1062	1354	310	1665	1843	432	2275
01/01/2050 19:20	783	271	1054	1339	309	1647	1822	424	2246
01/01/2050 19:25	773	268	1041	1327	307	1634	1800	416	2216
01/01/2050 19:30	761	266	1027	1317	305	1622	1782	411	2194
01/01/2050 19:35	749	263	1012	1305	303	1609	1769	410	2178
01/01/2050 19:40	736	261	997	1291	301	1592	1756	410	2165
01/01/2050 19:45	722	259	981	1275	300	1574	1741	408	2149
01/01/2050 19:50	711	256	967	1258	298	1556	1724	404	2128

	U/S	Prospect	D/S	U/S	Rodeo	D/S	U/S	Regnart	D/S
Date / Time	Pros ect		Prospect	Rodeo		Rodeo	Regnart		Regnart
	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR	100YR
	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS	CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 19:55	702	254	956	1241	296	1537	1706	400	2106
01/01/2050 20:00	693	252	945	1225	295	1520	1687	397	2083
01/01/2050 20:05	685	250	935	1209	293	1502	1668	394	2062
01/01/2050 20:10	677	248	925	1195	292	1487	1649	392	2041
01/01/2050 20:15	669	247	916	1181	290	1472	1631	391	2022
01/01/2050 20:20	661	245	906	1168	289	1457	1615	389	2003
01/01/2050 20:25	653	243	896	1156	287	1443	1599	387	1986
01/01/2050 20:30	645	242	887	1143	286	1429	1584	385	1969
01/01/2050 20:35	637	240	877	1131	284	1415	1569	383	1952
01/01/2050 20:40	628	238	867	1118	282	1400	1554	380	1933
01/01/2050 20:45	620	236	856	1106	280	1386	1539	376	1914
01/01/2050 20:50	612	234	846	1093	278	1371	1523	370	1893
01/01/2050 20:55	605	232	836	1081	276	1356	1508	364	1872
01/01/2050 21:00	597	229	827	1068	274	1342	1493	359	1851
01/01/2050 21:05	594	227	822	1056	271	1328	1477	355	1833
01/01/2050 21:10	600	225	824	1045	269	1314	1462	352	1814
01/01/2050 21:15	608	223	831	1035	267	1302	1448	348	1796
01/01/2050 21:20	610	220	830	1029	265	1293	1434	345	1779
01/01/2050 21:25	602	218	820	1027	263	1289	1421	342	1763
01/01/2050 21:30	588	216	804	1027	261	1287	1412	339	1751
01/01/2050 21:35	575	213	788	1022	259	1281	1406	336	1742
01/01/2050 21:40	561	210	771	1010	257	1267	1403	334	1736
01/01/2050 21:45	546	207	753	994	255	1249	1396	332	1728
01/01/2050 21:50	534	205	739	976	254	1230	1383	332	1714
01/01/2050 21:55	522	203	725	958	252	1210	1364	332	1696
01/01/2050 22:00	512	201	712	940	251	1191	1344	332	1677
01/01/2050 22:05	506	199	705	925	249	1174	1325	332	1656
01/01/2050 22:10	510	197	707	911	248	1159	1306	331	1636
01/01/2050 22:15	517	195	713	900	247	1147	1288	330	1618
01/01/2050 22:20	521	194	715	893	246	1139	1273	329	1602
01/01/2050 22:25	521	192	713	892	245	1137	1260	328	1589
01/01/2050 22:30	518	191	709	895	243	1138	1252	327	1579
01/01/2050 22:35	515	190	705	896	242	1138	1248	327	1575
01/01/2050 22:40	512	189	701	893	241	1134	1248	327	1575
01/01/2050 22:45	510	187	697	889	240	1128	1248	326	1574
01/01/2050 22:50	507	186	693	883	238	1122	1244	324	1569
01/01/2050 22:55	503	185	687	878	237	1115	1238	322	1560
01/01/2050 23:00	497	183	680	873	236	1109	1231	319	1550
01/01/2050 23:05	493	182	675	868	234	1102	1224	317	1541
01/01/2050 23:10	490	180	670	861	233	1094	1217	314	1531

Date / Time	U/S Prosect 100YR CFS	Prospect 100YR CFS	D/S Prospect 100YR CFS	U/S Rodeo 100YR CFS	Rodeo 100YR CFS	D/S Rodeo 100YR CFS	U/S Regnart 100YR CFS	Regnart 100YR CFS	D/S Regnart 100YR CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/01/2050 23:15	487	179	666	853	231	1085	1209	312	1521
01/01/2050 23:20	484	177	662	846	230	1076	1201	310	1511
01/01/2050 23:25	482	176	658	840	229	1069	1192	308	1499
01/01/2050 23:30	479	174	653	835	228	1062	1182	305	1488
01/01/2050 23:35	477	173	649	830	226	1056	1174	303	1477
01/01/2050 23:40	474	171	645	825	225	1050	1167	301	1468
01/01/2050 23:45	471	170	641	820	224	1045	1160	299	1460
01/01/2050 23:50	469	169	638	816	223	1039	1154	298	1452
01/01/2050 23:55	467	168	634	812	222	1034	1148	297	1446
36893	464	167	631	807	221	1029	1142	297	1439
01/02/2050 0:05	453	165	618	803	220	1023	1137	296	1432
01/02/2050 0:10	434	163	597	798	219	1017	1131	294	1425
01/02/2050 0:15	416	161	577	790	218	1008	1125	293	1417
01/02/2050 0:20	398	158	556	777	216	992	1117	291	1408
01/02/2050 0:25	381	154	535	756	214	970	1107	288	1395
01/02/2050 0:30	365	150	515	733	212	945	1092	282	1375
01/02/2050 0:35	350	145	495	710	209	920	1070	274	1345
01/02/2050 0:40	335	139	474	688	207	894	1045	264	1309
01/02/2050 0:45	319	134	453	665	204	869	1018	255	1273
01/02/2050 0:50	304	128	432	642	202	844	991	247	1238
01/02/2050 0:55	288	123	411	619	199	818	965	238	1203
01/02/2050 1:00	273	118	391	595	196	791	938	230	1168
01/02/2050 1:05	259	113	372	571	193	765	911	223	1133
01/02/2050 1:10	245	108	354	548	190	738	883	215	1098
01/02/2050 1:15	233	104	337	525	188	713	856	208	1064
01/02/2050 1:20	221	99	321	503	185	688	828	201	1029
01/02/2050 1:25	211	95	306	482	180	662	801	195	996
01/02/2050 1:30	200	91	292	461	176	637	774	189	963
01/02/2050 1:35	191	87	278	442	172	614	748	183	931
01/02/2050 1:40	182	84	266	424	168	592	722	177	899
01/02/2050 1:45	173	80	254	407	163	570	697	171	868
01/02/2050 1:50	165	77	242	390	159	549	673	166	839
01/02/2050 1:55	157	74	231	374	155	530	650	161	811
01/02/2050 2:00	150	71	221	359	151	511	628	156	784
01/02/2050 2:05	143	68	212	345	148	493	606	151	758
01/02/2050 2:10	137	66	202	332	144	475	585	146	731
01/02/2050 2:15	131	63	194	319	140	459	565	139	704
01/02/2050 2:20	125	61	185	306	137	443	545	134	679
01/02/2050 2:25	119	58	178	294	133	427	526	128	654

Date / Time	U/S Prosect 100YR CFS	Prospect 100YR CFS	D/S Prospect 100YR CFS	U/S Rodeo 100YR CFS	Rodeo 100YR CFS	D/S Rodeo 100YR CFS	U/S Regnart 100YR CFS	Regnart 100YR CFS	D/S Regnart 100YR CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/02/2050 2:30	114	56	170	283	130	413	508	123	631
01/02/2050 2:35	109	54	163	272	126	399	491	117	608
01/02/2050 2:40	104	52	156	262	123	385	474	113	587
01/02/2050 2:45	100	50	150	252	120	372	458	108	566
01/02/2050 2:50	95	48	144	243	115	358	443	103	546
01/02/2050 2:55	91	47	138	233	111	344	428	99	527
01/02/2050 3:00	87	45	132	224	106	330	413	95	508
01/02/2050 3:05	84	43	127	215	102	317	398	91	489
01/02/2050 3:10	80	42	122	206	98	304	383	87	470
01/02/2050 3:15	77	40	117	198	94	292	368	83	452
01/02/2050 3:20	73	39	112	191	90	281	354	80	434
01/02/2050 3:25	70	38	108	183	86	269	340	77	417
01/02/2050 3:30	67	36	103	176	83	259	327	73	401
01/02/2050 3:35	64	35	99	169	79	249	315	70	385
01/02/2050 3:40	62	34	95	162	76	239	303	67	370
01/02/2050 3:45	59	32	92	156	73	229	291	64	356
01/02/2050 3:50	57	31	88	150	70	220	280	62	342
01/02/2050 3:55	54	30	85	144	67	212	269	59	329
01/02/2050 4:00	52	29	81	139	65	203	259	57	316
01/02/2050 4:05	50	28	78	134	62	195	249	54	304
01/02/2050 4:10	48	27	75	128	59	188	240	52	292
01/02/2050 4:15	46	26	72	123	57	180	231	50	281
01/02/2050 4:20	44	25	69	118	55	173	222	47	268
01/02/2050 4:25	42	24	67	114	52	166	213	44	257
01/02/2050 4:30	40	24	64	109	50	160	204	41	245
01/02/2050 4:35	39	23	61	105	48	153	196	38	235
01/02/2050 4:40	37	22	59	101	46	147	188	36	224
01/02/2050 4:45	35	21	57	97	44	141	181	34	215
01/02/2050 4:50	34	20	54	93	43	136	174	32	205
01/02/2050 4:55	32	20	52	89	40	130	167	30	196
01/02/2050 5:00	31	19	50	86	38	123	160	28	188
01/02/2050 5:05	30	18	48	82	35	117	154	26	180
01/02/2050 5:10	28	18	46	78	33	111	148	25	172
01/02/2050 5:15	27	17	44	75	31	106	141	23	165
01/02/2050 5:20	26	17	42	71	29	100	135	22	157
01/02/2050 5:25	25	16	41	68	27	95	128	20	149
01/02/2050 5:30	23	15	39	65	25	90	122	19	141
01/02/2050 5:35	22	15	37	62	24	86	116	18	134
01/02/2050 5:40	21	14	36	59	22	82	110	17	127
01/02/2050 5:45	20	14	34	57	21	78	104	16	120

Date / Time	U/S Prosect 100YR CFS	Prospect 100YR CFS	D/S Prospect 100YR CFS	U/S Rodeo 100YR CFS	Rodeo 100YR CFS	D/S Rodeo 100YR CFS	U/S Regnart 100YR CFS	Regnart 100YR CFS	D/S Regnart 100YR CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/02/2050 5:50	19	13	33	54	20	74	99	15	114
01/02/2050 5:55	19	13	31	52	18	70	94	14	108
01/02/2050 6:00	18	12	30	49	17	66	90	13	103
01/02/2050 6:05	17	12	29	47	16	63	85	12	97
01/02/2050 6:10	16	11	27	45	15	60	81	12	92
01/02/2050 6:15	15	11	26	43	14	57	77	11	88
01/02/2050 6:20	15	10	25	41	13	54	73	10	83
01/02/2050 6:25	14	10	24	39	13	51	69	10	79
01/02/2050 6:30	13	10	23	37	12	49	66	9	75
01/02/2050 6:35	13	9	22	35	11	46	62	9	71
01/02/2050 6:40	12	9	21	34	10	44	59	8	67
01/02/2050 6:45	12	9	20	32	10	42	56	8	64
01/02/2050 6:50	11	8	19	31	9	40	54	7	61
01/02/2050 6:55	10	8	19	29	9	38	51	7	58
01/02/2050 7:00	10	8	18	28	8	36	49	6	55
01/02/2050 7:05	9	8	17	27	8	35	46	6	52
01/02/2050 7:10	9	7	16	26	7	33	44	6	50
01/02/2050 7:15	9	7	16	25	7	31	42	5	47
01/02/2050 7:20	8	7	15	23	6	30	40	5	45
01/02/2050 7:25	8	6	14	22	6	28	38	5	43
01/02/2050 7:30	7	6	14	21	6	27	36	5	41
01/02/2050 7:35	7	6	13	20	5	26	34	4	39
01/02/2050 7:40	7	6	13	20	5	25	33	4	37
01/02/2050 7:45	6	6	12	19	5	23	31	4	35
01/02/2050 7:50	6	5	11	18	4	22	30	4	33
01/02/2050 7:55	6	5	11	17	4	21	28	3	32
01/02/2050 8:00	6	5	10	16	4	20	27	3	30
01/02/2050 8:05	5	5	10	16	4	19	26	3	29
01/02/2050 8:10	5	5	10	15	4	18	25	3	27
01/02/2050 8:15	5	4	9	14	3	18	23	3	26
01/02/2050 8:20	5	4	9	14	3	17	22	3	25
01/02/2050 8:25	4	4	8	13	3	16	21	2	24
01/02/2050 8:30	4	4	8	12	3	15	20	2	23
01/02/2050 8:35	4	4	8	12	3	15	19	2	21
01/02/2050 8:40	4	4	7	11	3	14	18	2	20
01/02/2050 8:45	4	3	7	11	2	13	18	2	19
01/02/2050 8:50	3	3	7	10	2	13	17	2	19
01/02/2050 8:55	3	3	6	10	2	12	16	2	18
01/02/2050 9:00	3	3	6	9	2	11	15	2	17
01/02/2050 9:05	3	3	6	9	2	11	15	1	16

Date / Time	U/S Prosect 100YR CFS	Prospect 100YR CFS	D/S Prospect 100YR CFS	U/S Rodeo 100YR CFS	Rodeo 100YR CFS	D/S Rodeo 100YR CFS	U/S Regnart 100YR CFS	Regnart 100YR CFS	D/S Regnart 100YR CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/02/2050 9:10	3	3	5	9	2	10	14	1	15
01/02/2050 9:15	3	3	5	8	2	10	13	1	15
01/02/2050 9:20	2	3	5	8	2	9	13	1	14
01/02/2050 9:25	2	2	5	7	2	9	12	1	13
01/02/2050 9:30	2	2	5	7	1	8	11	1	13
01/02/2050 9:35	2	2	4	7	1	8	11	1	12
01/02/2050 9:40	2	2	4	6	1	8	10	1	11
01/02/2050 9:45	2	2	4	6	1	7	10	1	11
01/02/2050 9:50	2	2	4	6	1	7	9	1	10
01/02/2050 9:55	2	2	4	6	1	7	9	1	10
01/02/2050 10:00	2	2	3	5	1	6	9	1	9
01/02/2050 10:05	1	2	3	5	1	6	8	1	9
01/02/2050 10:10	1	2	3	5	1	6	8	1	8
01/02/2050 10:15	1	2	3	5	1	5	7	1	8
01/02/2050 10:20	1	2	3	4	1	5	7	1	8
01/02/2050 10:25	1	1	3	4	1	5	7	1	7
01/02/2050 10:30	1	1	2	4	1	5	6	1	7
01/02/2050 10:35	1	1	2	4	1	4	6	0	7
01/02/2050 10:40	1	1	2	4	1	4	6	0	6
01/02/2050 10:45	1	1	2	3	1	4	5	0	6
01/02/2050 10:50	1	1	2	3	1	4	5	0	6
01/02/2050 10:55	1	1	2	3	1	3	5	0	5
01/02/2050 11:00	1	1	2	3	0	3	5	0	5
01/02/2050 11:05	1	1	2	3	0	3	4	0	5
01/02/2050 11:10	1	1	1	2	0	3	4	0	4
01/02/2050 11:15	0	1	1	2	0	3	4	0	4
01/02/2050 11:20	0	1	1	2	0	3	4	0	4
01/02/2050 11:25	0	1	1	2	0	2	4	0	4
01/02/2050 11:30	0	1	1	2	0	2	3	0	4
01/02/2050 11:35	0	1	1	2	0	2	3	0	3
01/02/2050 11:40	0	1	1	2	0	2	3	0	3
01/02/2050 11:45	0	1	1	2	0	2	3	0	3
01/02/2050 11:50	0	1	1	2	0	2	3	0	3
01/02/2050 11:55	0	1	1	1	0	2	2	0	3
01/02/2050 12:00	0	1	1	1	0	2	2	0	2
01/02/2050 12:05	0	1	1	1	0	1	2	0	2
01/02/2050 12:10	0	0	1	1	0	1	2	0	2
01/02/2050 12:15	0	0	1	1	0	1	2	0	2
01/02/2050 12:20	0	0	1	1	0	1	2	0	2
01/02/2050 12:25	0	0	1	1	0	1	2	0	2

Date / Time	U/S Prosect 100YR CFS	Prospect 100YR CFS	D/S Prospect 100YR CFS	U/S Rodeo 100YR CFS	Rodeo 100YR CFS	D/S Rodeo 100YR CFS	U/S Regnart 100YR CFS	Regnart 100YR CFS	D/S Regnart 100YR CFS
peak	1087	294	1367	1634	323	1956	2097	559	2639
01/02/2050 12:30	0	0	1	1	0	1	2	0	2
01/02/2050 12:35	0	0	0	1	0	1	1	0	2
01/02/2050 12:40	0	0	0	1	0	1	1	0	1
01/02/2050 12:45	0	0	0	1	0	1	1	0	1
01/02/2050 12:50	0	0	0	1	0	1	1	0	1
01/02/2050 12:55	0	0	0	1	0	1	1	0	1
01/02/2050 13:00	0	0	0	1	0	1	1	0	1
01/02/2050 13:05	0	0	0	1	0	1	1	0	1
01/02/2050 13:10	0	0	0	1	0	1	1	0	1
01/02/2050 13:15	0	0	0	1	0	1	1	0	1
01/02/2050 13:20	0	0	0	0	0	1	1	0	1
01/02/2050 13:25	0	0	0	0	0	1	1	0	1
01/02/2050 13:30	0	0	0	0	0	0	1	0	1
01/02/2050 13:35	0	0	0	0	0	0	1	0	1
01/02/2050 13:40	0	0	0	0	0	0	1	0	1
01/02/2050 13:45	0	0	0	0	0	0	1	0	1
01/02/2050 13:50	0	0	0	0	0	0	1	0	1
01/02/2050 13:55	0	0	0	0	0	0	1	0	1
01/02/2050 14:00	0	0	0	0	0	0	1	0	1
01/02/2050 14:05	0	0	0	0	0	0	0	0	1
01/02/2050 14:10	0	0	0	0	0	0	0	0	0
01/02/2050 14:15	0	0	0	0	0	0	0	0	0
01/02/2050 14:20	0	0	0	0	0	0	0	0	0
01/02/2050 14:25	0	0	0	0	0	0	0	0	0
01/02/2050 14:30	0	0	0	0	0	0	0	0	0
01/02/2050 14:35	0	0	0	0	0	0	0	0	0
01/02/2050 14:40	0	0	0	0	0	0	0	0	0
01/02/2050 14:45	0	0	0	0	0	0	0	0	0
01/02/2050 14:50	0	0	0	0	0	0	0	0	0
01/02/2050 14:55	0	0	0	0	0	0	0	0	0
01/02/2050 15:00	0	0	0	0	0	0	0	0	0
01/02/2050 15:05	0	0	0	0	0	0	0	0	0
01/02/2050 15:10	0	0	0	0	0	0	0	0	0
01/02/2050 15:15	0	0	0	0	0	0	0	0	0
01/02/2050 15:20	0	0	0	0	0	0	0	0	0
01/02/2050 15:25	0	0	0	0	0	0	0	0	0
01/02/2050 15:30	0	0	0	0	0	0	0	0	0
01/02/2050 15:35	0	0	0	0	0	0	0	0	0
01/02/2050 15:40	0	0	0	0	0	0	0	0	0
01/02/2050 15:45	0	0	0	0	0	0	0	0	0